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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,245	06/26/2003	Hiroshi Nishikawa	P23521	4244
7055 7590 08/29/2007 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER DANIELSEN, NATHAN ANDREW	
			ART UNIT 2627	PAPER NUMBER
			NOTIFICATION DATE 08/29/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary

Application No.

10/606,245

Applicant(s)

NISHIKAWA, HIROSHI

Examiner

Nathan Danielsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Claims 1-16 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06 June 2007 has been entered.

Claim Objections

3. Claims 5 and 13 are objected to because "The optical head according to claim [X], said" should be --The optical head according to claim [X], wherein said--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (hereinafter the AAPA), in view of Akiyama et al (US Patent 5,488,599; hereinafter Akiyama).

Regarding claims 1 and 9, the AAPA discloses an optical head, comprising:

a light emitting device that emits a light beam (¶ 3);

a beam-splitting prism unit (¶ 3)

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an objective lens that converges the light beam emerged from the beam-splitting prism onto the optical disc (¶ 3); and

an error signal detecting system that generates a servo signal for servo control based on the light beam reflected by the optical disc (¶s 3 and 7).

However, the AAPA fails to disclose a deflector, or the details thereof.

In the same field of endeavor, Akiyama discloses:

a deflector that deflects the light beam emitted by the light emitting device toward an optical disc (element 23" in figures 7 and 8),

wherein said deflector includes a single-element prism (element 23") having a first surface into which the light beam from said light emitting device enters (element 23a"), a second surface from which the light beam proceeding toward said objective lens emerges (element 23b"), and a third surface from which the light beam reflected by the optical disc emerges (element 23c"), the light beam emerged from the third surface proceeding toward said error signal detecting system (figures 7 and 8), and

wherein the light beam from said light emitting device is deflected by the first surface, and the light beam reflected by the optical disc is reflected by the first surface (figure 8).

Further regarding claim 1, Akiyama discloses where said prism satisfies a condition:

$$\theta_1 = -\theta_2 \text{ (col. 9, lines 32-42)}$$

where θ_1 represents an angle which the second surface forms with respect to the first surface, and θ_2 represents an angle which the third surface forms with respect to the first surface, polarity of each of the angles θ_1 and θ_2 being defined depending on whether the each of the angles θ_1 and θ_2 has counterclockwise direction or has clockwise direction (col. 9, lines 18-42).

Further regarding claim 9, Akiyama discloses where said prism satisfies a condition:

$$-\pi/1080 \leq \text{radian } \alpha_1 + \beta_1 \leq \pi/1080 \text{ radian (col. 9, lines 32-42)}$$

where α_1 represents an emergence angle which the light beam emerging from the second surface and proceeding toward said objective lens forms with respect to a normal to the

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second surface, β_1 represents an emergence angle which the light beam emerging from the third surface and proceeding toward said error signal detecting system forms with respect to a normal to the third surface, polarity of each of the angles α_1 and β_1 being defined depending on whether the each of the angles α_1 and β_1 has counterclockwise direction or has clockwise direction (col. 9, lines 18-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the beam splitter of the AAPA with the deflector/prism of Akiyama, for the purpose of shaping an emitted beam while separating the light reflected from the optical disc from that emitted by the light source (col. 5, lines 43-50).

Regarding claims 2 and 10, the AAPA, in view of Akiyama, discloses everything claimed, as applied to claims 1 and 9. Additionally, the AAPA discloses where said error signal detecting system includes a beam splitting system (§ 5) which divides the light beam reflected by the optical disc into a plurality of beams including a pair of beams for generating the servo signal and causes the pair of beams to defocus, with respect to a predetermined focal plane, in positive and negative directions, respectively (§ 5).

Regarding claims 3 and 11, the AAPA, in view of Akiyama, discloses everything claimed, as applied to claims 2 and 10. Additionally, the AAPA discloses where said error signal detecting system further includes:

a pair of sensors for the servo signal, the pair of beams divided by the beam splitting system

impinging on the pair of sensors, respectively (elements 51 and 51' in figure 3 and

¶s 7-9); and

a signal processing unit that generates the servo signal based on outputs of the pair of sensors

(elements 53-56, 60, and 61 in figure 3 and ¶s 7-9).

Regarding claims 4 and 12, the AAPA, in view of Akiyama, discloses everything claimed, as applied to claims 3 and 11. Additionally, the AAPA discloses where the servo signal generated by the pair of sensors includes a focus error signal and a tracking error signal (outputs of elements 60 and 61 in figure 3 and ¶s 7-9).

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Regarding claims 5 and 13, the AAPA, in view of Akiyama, discloses everything claimed, as applied to claims 3 and 11. Additionally, the AAPA discloses where said error signal detecting system generates the servo signal in accordance with Spot Size method and Push-Pull method (§ 9).

Regarding claims 6 and 14, the AAPA, in view of Akiyama, discloses everything claimed, as applied to claims 2 and 10. Additionally, the AAPA discloses where the plurality of beams divided by the beam splitting system includes a beam for a data signal (output of element 62 in figure 3 and ¶s 6-9).

Regarding claims 7, 8, 15, and 16, the AAPA, in view of Akiyama, discloses everything claimed, as applied to claims 1 and 9. However, the AAPA fails to disclose the details of the first surface.

In the same field of endeavor, Akiyama discloses where the first surface is formed as a beam splitting surface (element 23a" in figures 7 and 8) or a half mirror surface (element 121a in figures 14 and 15 and col. 12, lines 61-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the beam splitter of the AAPA with the deflector/prism of Akiyama having a beam splitting/half mirror surface, for the purpose of shaping an emitted beam while separating the light reflected from the optical disc from that emitted by the light source (col. 5, lines 43-50) and increasing the S/N ratio of an MO signal (col. 12, lines 61-65).

Response to Arguments

6. Applicant's arguments with respect to claims 1 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Closing Remarks/Comments

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Leterme et al (US Patent 4,542,492) disclose an isosceles beam-splitting prism similar to the one found in Akiyama.

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Closing Remarks/Comments

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Danielsen whose telephone number is (571) 272-4248. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan Danielsen
08/22/2007

/William R. Korzuch/
SPE, Art Unit 2627